CALS TEST NETWORK

CTN Test Report 92-016

AFTB-ID 92-023

Raster Transfer Test Using

Image Memory Systems, Inc.

MIL-R-28002 (Raster)

Quick Short Test Report

20 November 1992

Prepared for

Air Force Materiel Command

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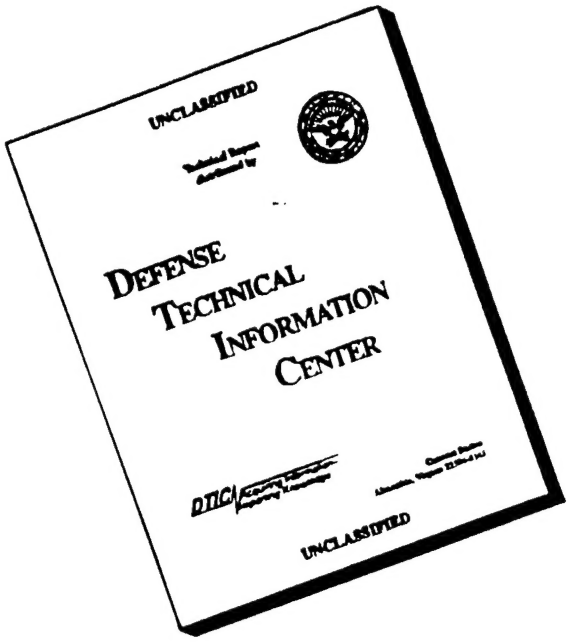

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CTN Test Report
92-016

AFTB-ID-92-23

Raster Transfer Test

Using Image Memory Systems, Inc.

MIL-R-28002 (Raster)

Quick Short Test Report

20 November 1992

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFTB Contact
Gary Lammers
(513) 427-2295

CTN Contact
Mel Lammers
(513) 427-2295

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Contents

1. Introduction

1.1 Background

The DoD Computer-aided Acquisition and Logistics Support (CALS) Test Network (CTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The CTN is a DoD-sponsored confederation of voluntary participants from industry and government managed by the Air Force Materiel Command.

The primary objective of the CTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards, formal and informal. Formal tests are large, comprehensive tests that follow a written test plan, require specific authorization from DoD, and may take months to prepare, execute, and report.

Informal tests are used by the CTN technical staff to broaden the testing base by including representative samples of the many systems and applications used by CTN participants. They also allow the CTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and to respond, in a timely manner, to the many requests for help that come from participants. Participants take part voluntarily and are benefited by receiving an evaluation of their latest implementation (interpretation) of the standards, interacting with the CTN technical staff, gaining experience in use of the standards, and developing increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test reported in this QSTR was to analyze Image Memory Systems' interpretation and use of the CALS Standards in generating raster data. Image Memory Systems used its CALS Raster Technical Data System to produce data in accordance with the standards and delivered it to the CTN technical staff on a floppy disk. The test was to evaluate the raster data files and not the transfer media.

2. Test Parameters

Test Plan: AFTB 92-23

Date of Evaluation: 3 April 1992

Evaluator:
George Elwood
Air Force CALS Test Bed
HQ AFMC/ENCT
4027 Colonel Glenn Hwy
Suite 200
Dayton, OH 45431-1601

Data Originator:
John D. Pugnale
Image Memory Systems, Inc.
6000 Webster Street
Dayton, OH 45414

Data Description:
Raster Test
7 Raster files

Data Source System: Raster

HARDWARE
Photomatrix Aperture Card Scanner

SOFTWARE
Image Memory Systems CARDSCAN V 1.0 R 6.2
Autodesk AutoCAD Release 11C2
Image Systems Technology (IST) CAD Overlay ESP 3.5
Image Systems Technology Compress 3.5

Evaluation Tools Used:

MIL-R-28002 (Raster)
SUN 3/60
CTN Raster Tools
Rosetta Technology Preview V3.1
Cheetah
Inset Systems HiJaak V2.02
SPC Harvard Graphics V3.0
Xerox Ventura Publisher

Standards Tested: MIL-R-28002

3. 1840A Analysis

3.1 External Packaging

The floppy disk was hand delivered to the Air Force CALS Test Bed in a commercial floppy disk mailer. The outside of the envelope was not marked with a magnetic media warning label. The envelope did have a label which indicated the number of files on the floppy disk.

3.2 Transmission Envelope

The floppy disk received by the Air Force Test Bed contained MIL-R-28002 files. The files were not named per the standard conventions. They had an additional extension on each file indicating that the files were "GP4".

3.2.1 Tape Formats

The data files were delivered on a floppy disk without the complete CALS file set. No Declaration file was included. The purpose of the test was to evaluate the data files and not the CALS transfer package.

3.2.2 Declaration and Header Fields

Not included on the floppy disk.

The header records on the raster files were evaluated manually. It was noted that the rpelcnt and rdensty records included a period after the data. This is not permitted in MIL-STD-1840A.

4. IGES Analysis

No IGES files were included on the floppy disk.

5. SGML Analysis

No text files were included on the floppy disk.

6. Raster Analysis

All 7 raster images were checked using the CTN *validg4* utility. This utility reported that all of the files were valid MIL-R-28002 files.

The files were evaluated using the CTN *calstb.350*. This utility is old and does not convert and display files unless they are formatted in a certain way. It will not display all MIL-R-28002 files. Of the seven files being evaluated, three were read in and displayed. It was noted that the displayed images had been scanned in at a slight angle. Many orphan pixels were noted.

The files were converted using Rosetta Technologies *Prepare* without reported problems. The resulting files were viewed using Rosetta Technologies *Preview*. Orphan pixels were noted along with the images being at a slight angle. File D001R007 had the most noticeable orphan pixels. The images were output in hard copy and are included in the appendix to this report. The output was generated at a medium resolution.

The files were converted using Inset Systems *HiJaak* without reported problem. The resulting files were converted to an IMG format and inserted into Xerox *Ventura Publisher*. The results are included in the appendix to this report.

7. CGM Analysis

No CGM files were included on the disk.

8. Conclusions and Recommendations

In summary, the floppy disk contained raster files which met current CALS MIL-R-28002 Standards. A minor error was noted in the raster head records rpelcnt and rdensty where a period was inserted after the data. The files could be read, translated and viewed using several software tools available in the AFTB. The only comment would relate to the quality of the images. Orphan pixels were on most of the images and they were scanned at a slight angle. Without copies of the originals, it could not be determined where the problem was generated.

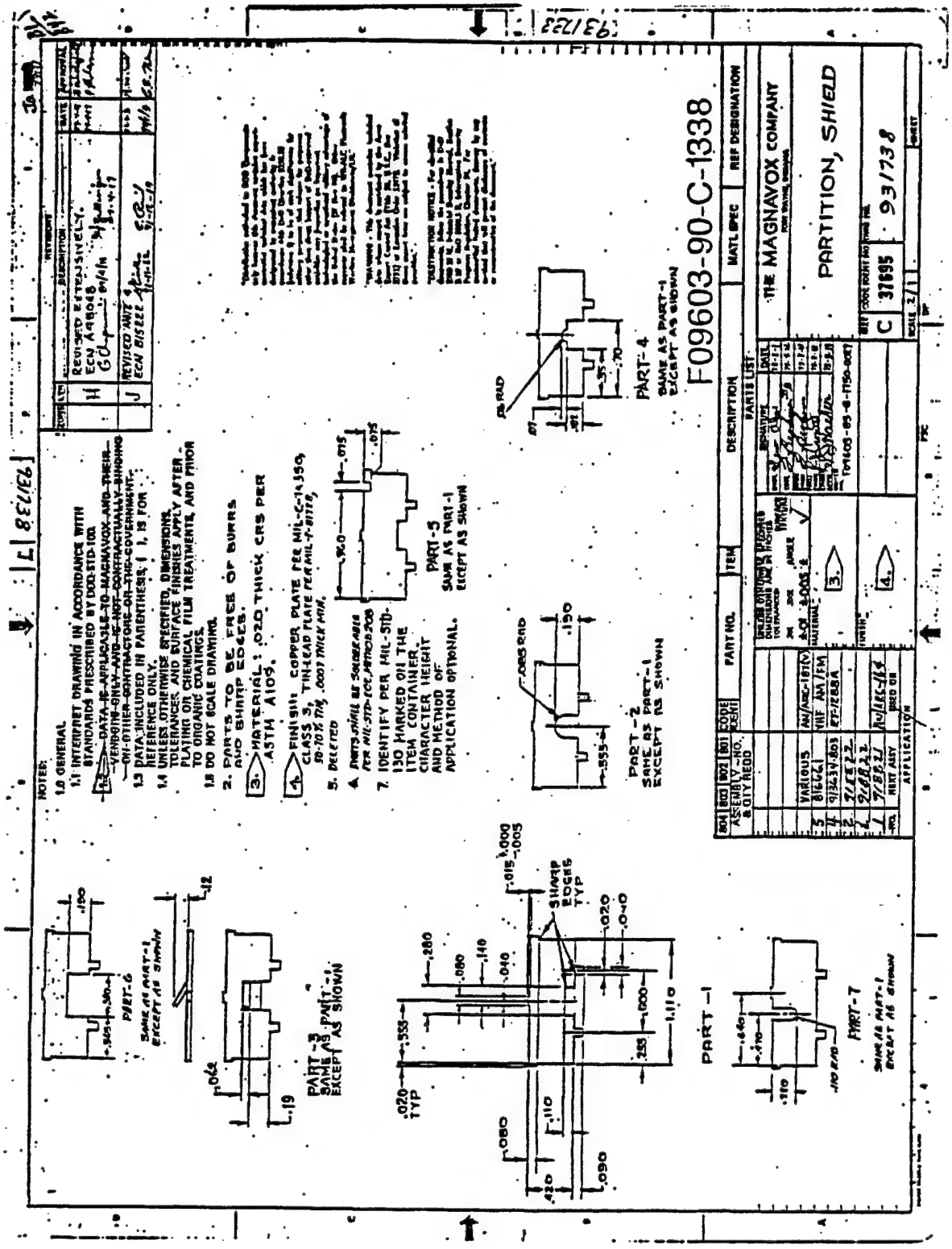
9. Image Memory Systems Processing Comments

The aperture cards were scanned at a threshold setting that provided the best compromise between line density and noise background. No effort was made to despeckle or deskew the scanned image. The scanned images were imported into AutoCAD using CAD Overlay ESP. A distribution statement and contract number were added to each image. The resulting image was converted to a CALS Type I format using IST compress software.

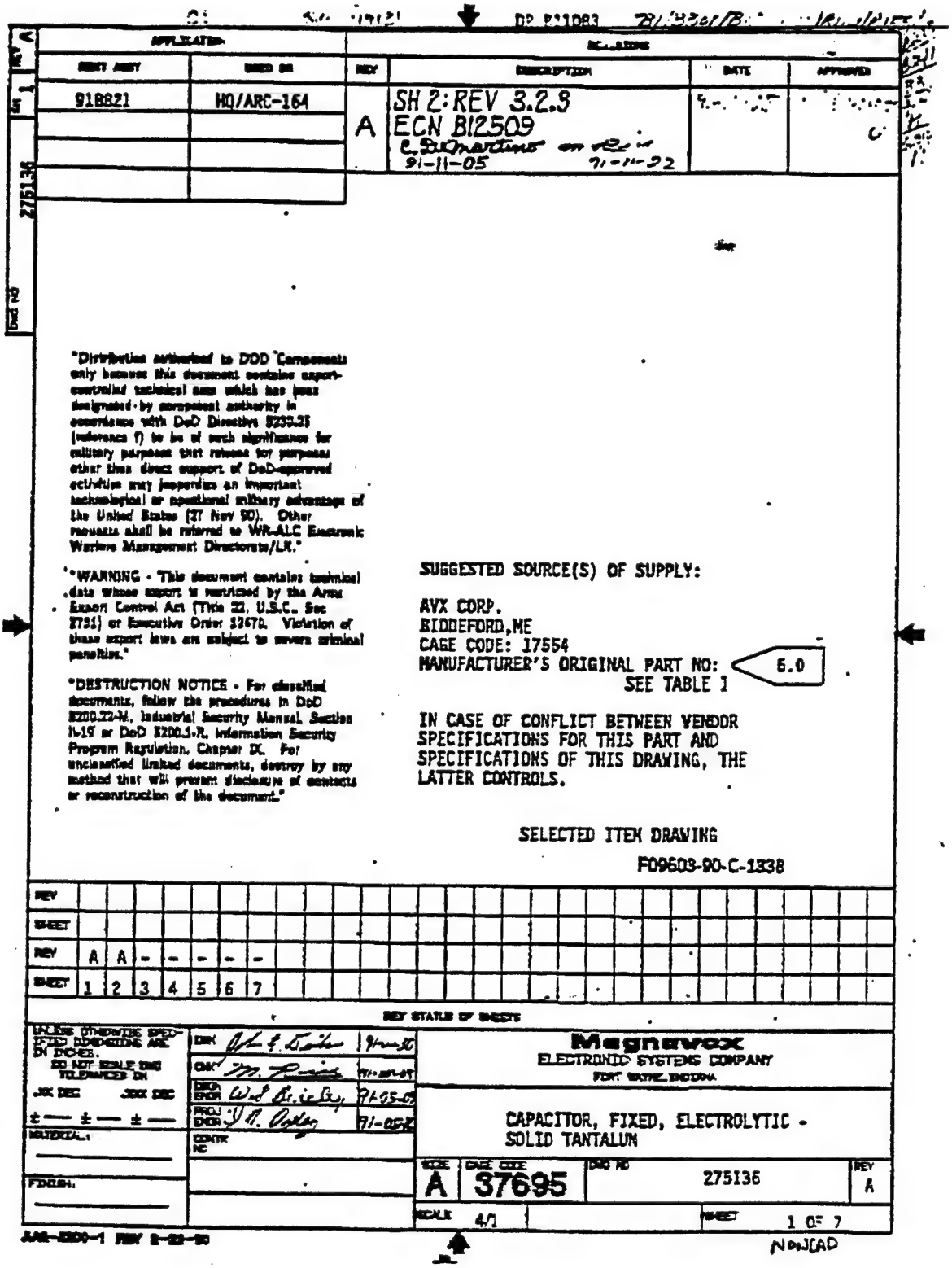
10. Appendix A - Raster Images

10.1 Preview

10.1.1 D001R001


F09603-90-C-1338
THE MAGNAVOX COMPANY
PARTITION, SHIELD
C 31695 93/738
PART-1
PART-2
PART-3
PART-4
PART-7
SHARP EDGES TYP

10.1.2 D001R002



REV	DESCRIPTION	DATE	APPROVED
A	SH 2: REV 3.2.3 ECN B12509 E. DiMartino on file in 91-11-05 91-11-22		

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SUGGESTED SOURCE(S) OF SUPPLY:

AVX CORP.
BIDDEFORD,ME
CAGE CODE: 17554
MANUFACTURER'S ORIGINAL PART NO: 6.0
SEE TABLE I

IN CASE OF CONFLICT BETWEEN VENDOR SPECIFICATIONS FOR THIS PART AND SPECIFICATIONS OF THIS DRAWING, THE LATTER CONTROLS.

SELECTED ITEM DRAWING

F09603-90-C-1338

REV																																
SHEET																																
REV	A	A	-	-	-	-	-																									
SHEET	1	2	3	4	5	6	7																									

REV STATUS OF SHEETS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DO NOT SCALE THIS DRAWING. TOLERANCES IN .XXX DEC ±— .XXX DEC ±— ANGULAR ±—

MATERIAL:

FINISH:

DRN [illegible] 91-05-07
CHK [illegible] 91-05-07
DESIGN ENGR [illegible] 91-05-07
PROJ ENGR [illegible] 91-05-07
CONTR NO

Magnavox
ELECTRONIC SYSTEMS COMPANY
FORT WAYNE, INDIANA

CAPACITOR, FIXED, ELECTROLYTIC - SOLID TANTALUM

SIZE A | CAGE CODE 37695 | DWG NO 275136 | REV A

SCALE 4/1 | SHEET 1 OF 7

JAN-STD-1 REV 2-22-90

NOT CAD

10.1.3 D001R003

3.3 MECHANICAL REQUIREMENTS

3.3.1 CONFIGURATION SHALL BE PER FIGURE 1.

3.3.2 LEADS SHALL BE SOLDERABLE AND SOLDERABILITY SHALL BE PROVEN BY TEST METHOD 208 OF MIL-STD-202.

3.3.3 MARKING SHALL BE IN ACCORDANCE WITH METHODS I AND II OF MIL-STD-1285 EXCEPT AS MODIFIED HEREIN.

3.3.3.1 CAPACITANCE, CAPACITANCE TOLERANCE, POLARITY ARE REQUIRED AS MINIMUM MARKING FOR THE PARTS.

3.3.3.2 PART IDENTIFICATION AND PURCHASER'S PART NUMBER SHALL BE MARKED ON THE UNIT PACKAGING.

3.3.3.3 IF METHOD II OF MIL-STD-1285 IS USED THE DOTS SHALL BE LOCATED AS SHOWN IN FIGURE 1. NOTE, BLACK DOTS ARE OMITTED WHERE BLACK CAPACITOR BODIES ARE USED.

3.3.4 TERMINAL STRENGTH TEST IS A LEAD PULL AND THEN THE LEADS SHALL WITHSTAND THREE 90° BENDS AND RETURN WITHOUT BREAKING.

3.4 ENVIRONMENTAL REQUIREMENTS

3.4.1 RELIABILITY AND FAILURE RATE LEVEL REQUIREMENTS ARE NOT APPLICABLE.

3.4.2 SEAL TEST IS NOT APPLICABLE.

3.4.3 IMMERSION TEST IS NOT APPLICABLE.

3.4.4 AFTER MOISTURE TEST THE CAPACITORS SHALL MEET THE AFTER REQUIREMENTS OF MIL-C-39003 EXCEPT FOR DISSIPATION FACTOR WHICH WILL BE ALLOWED A LIMIT OF 200% OF THE TABLE I VALUE AND CAPACITANCE WHICH WILL BE ALLOWED A LIMIT OF ± 10% OF TABLE I VALUE.

3.4.5 SALT SPRAY IS NOT APPLICABLE.

3.4.6 AFTER LIFE TEST, DC LEAKAGE AND DISSIPATION FACTOR ARE TO MEET TABLE I VALUES AND THE CAPACITANCE SHALL HAVE CHANGED NO MORE THAN ± 15%.

3.4.7 STABILITY LIMITS AT LOW AND HIGH TEMPERATURES TO BE AS FOLLOWS:

3.4.7.1 AT -55°C CAPACITANCE CHANGE TO BE WITHIN -15% OF THE 25°C VALUE AND THE DISSIPATION FACTOR TO BE WITHIN TABLE I LIMITS.

3.4.7.2 AT +25°C CAPACITANCE TO BE WITHIN ± 5% OF THE ORIGINAL +25°C VALUE AND DISSIPATION FACTOR TO BE WITHIN THE TABLE I LIMITS.

Magnavox				
DRAWN C. Dobbins	REV A	PAGE CODE 37695	DWG NO 275136	REV -
ISSUED 91-04-24	SCALE 4/1		SHEET 3	

F09603-90-C-1338

AMS-4301-1 REV 8-22-90

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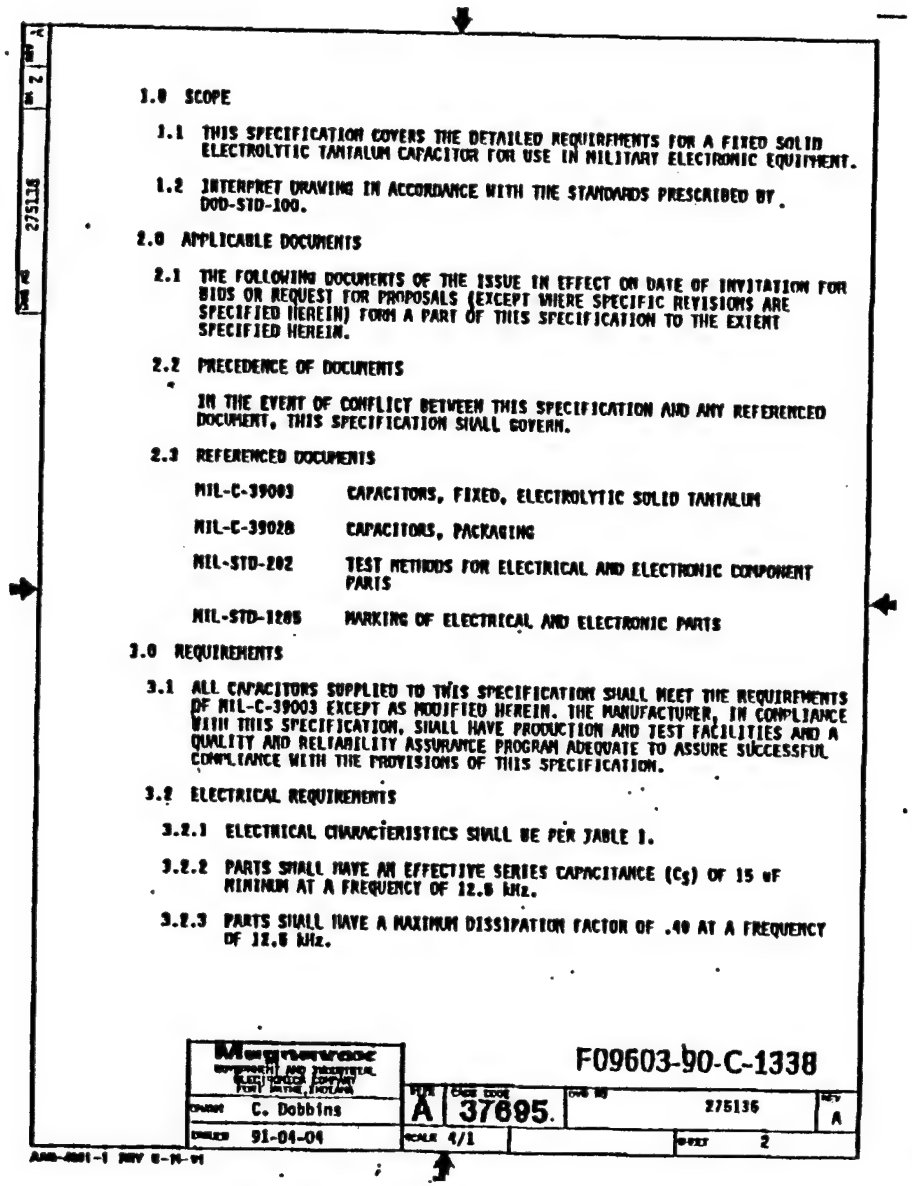
10.1.4 D001R004



SHT 2 REV A
275136

1.0 SCOPE

1.1 THIS SPECIFICATION COVERS THE DETAILED REQUIREMENTS FOR A FIXED SOLID ELECTROLYTIC TANTALUM CAPACITOR FOR USE IN MILITARY ELECTRONIC EQUIPMENT.

1.2 INTERPRET DRAWING IN ACCORDANCE WITH THE STANDARDS PRESCRIBED BY DOD-STD-100.

2.0 APPLICABLE DOCUMENTS

2.1 THE FOLLOWING DOCUMENTS OF THE ISSUE IN EFFECT ON DATE OF INVITATION FOR BIDS OR REQUEST FOR PROPOSALS (EXCEPT WHERE SPECIFIC REVISIONS ARE SPECIFIED HEREIN) FORM A PART OF THIS SPECIFICATION TO THE EXTENT SPECIFIED HEREIN.

2.2 PRECEDENCE OF DOCUMENTS

IN THE EVENT OF CONFLICT BETWEEN THIS SPECIFICATION AND ANY REFERENCED DOCUMENT, THIS SPECIFICATION SHALL GOVERN.

2.3 REFERENCED DOCUMENTS

MIL-C-39003	CAPACITORS, FIXED, ELECTROLYTIC SOLID TANTALUM
MIL-C-39028	CAPACITORS, PACKAGING
MIL-STD-202	TEST METHODS FOR ELECTRICAL AND ELECTRONIC COMPONENT PARTS
MIL-STD-1285	MARKING OF ELECTRICAL AND ELECTRONIC PARTS

3.0 REQUIREMENTS

3.1 ALL CAPACITORS SUPPLIED TO THIS SPECIFICATION SHALL MEET THE REQUIREMENTS OF MIL-C-39003 EXCEPT AS MODIFIED HEREIN. THE MANUFACTURER, IN COMPLIANCE WITH THIS SPECIFICATION, SHALL HAVE PRODUCTION AND TEST FACILITIES AND A QUALITY AND RELIABILITY ASSURANCE PROGRAM ADEQUATE TO ASSURE SUCCESSFUL COMPLIANCE WITH THE PROVISIONS OF THIS SPECIFICATION.

3.2 ELECTRICAL REQUIREMENTS

3.2.1 ELECTRICAL CHARACTERISTICS SHALL BE PER TABLE I.

3.2.2 PARTS SHALL HAVE AN EFFECTIVE SERIES CAPACITANCE (C_S) OF 15 uF MINIMUM AT A FREQUENCY OF 12.8 kHz.

3.2.3 PARTS SHALL HAVE A MAXIMUM DISSIPATION FACTOR OF .40 AT A FREQUENCY OF 12.8 kHz.

Magnavox
GOVERNMENT AND INDUSTRIAL ELECTRONICS COMPANY FORT WAYNE, INDIANA

DRAWN C. Dobbins	SIZE A	CAGE CODE 37695	DWG NO 275136	REV A
DATE 91-04-04	SCALE 4/1		SHEET 2	

F09603-90-C-1338

AMS-4001-1 REV E-M-91

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10.1.5 D001R005

3.4.7.3 AT +85°C THE CAPACITANCE CHANGE FROM +25°C VALUE TO BE +15% MAXIMUM, THE DISSIPATION FACTOR TO BE WITHIN 200% OF TABLE I VALUE, THE DC LEAKAGE TO BE WITHIN 10 TIMES TABLE I VALUE.

3.4.7.4 AT +125°C THE CAPACITANCE CHANGE FROM +25°C VALUE TO BE +20% MAXIMUM, THE DISSIPATION FACTOR TO BE WITHIN 200% OF TABLE I VALUE, THE DC LEAKAGE TO BE WITHIN 15 TIMES TABLE I VALUE WHEN MEASURED AT 66% OF RATED VOLTAGE.

3.4.8 AFTER SURGE VOLTAGE TEST THE DC LEAKAGE AND DISSIPATION FACTOR SHALL MEET TABLE I VALUE, THE CAPACITANCE SHALL BE WITHIN ±5% OF ORIGINAL LIMITS.

3.4.9 RADIOGRAPH INSPECTION IS NOT APPLICABLE.

3.4.10 THERMAL SHOCK AND VOLTAGE AGING TESTING SPECIFIED UNDER GROUP A TESTING IS NOT REQUIRED.

3.5 PRODUCT ASSURANCE

3.5.1 ONLY THOSE DEVICES THAT HAVE BEEN INSPECTED FOR AND MEET THE REQUIREMENTS OF THIS SPECIFICATION SHALL BE MARKED AND DELIVERED.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 RESPONSIBILITY FOR INSPECTION

THE MANUFACTURER IS RESPONSIBLE FOR THE PERFORMANCE OF ALL INSPECTION REQUIREMENTS AS SPECIFIED HEREIN.

4.2 QUALIFICATION TESTING SHALL NOT BE PERFORMED UNLESS REQUESTED BY THE PURCHASER. HOWEVER, THE PURCHASER RESERVES THE RIGHT TO QUALIFY ALL PARTS AGAINST THIS DOCUMENT TO THE EXTENT DEEMED NECESSARY.

4.3 QUALITY CONFORMANCE PROVISIONS

4.3.1 PARTS SHALL BE SCREENED PER PARAGRAPHS 3.2.2 AND 3.2.3 ON 100% BASIS.

4.3.1.1 A CERTIFICATION OF COMPLIANCE SHALL BE SUPPLIED WITH THE LOT OF MATERIAL.

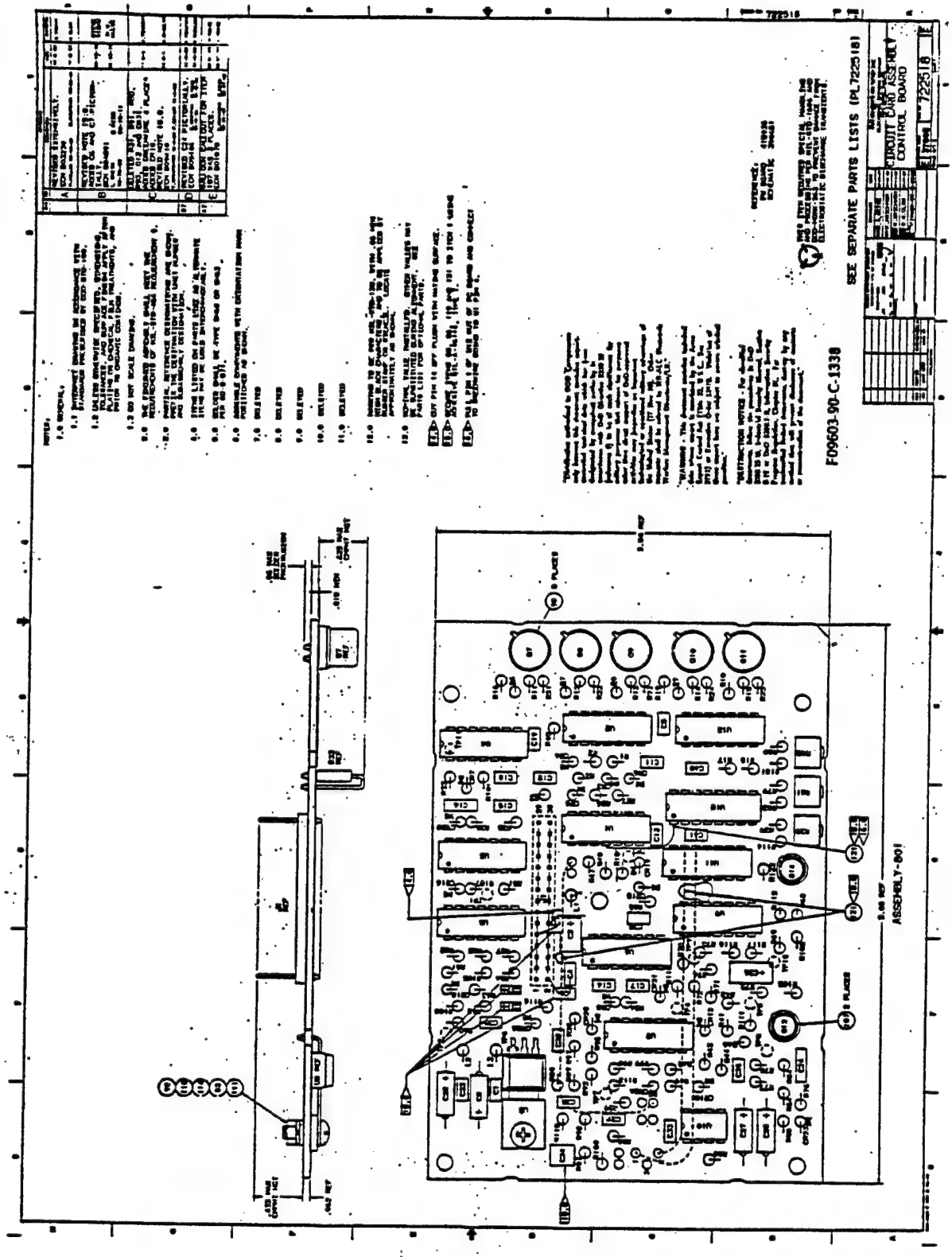
4.4 TEST CONDITION

4.4.1 FOR LEAD PULL OF THE TERMINAL STRENGTH TEST SHALL USE A FORCE OF 8 oz FOR FIVE SECONDS IN THE DIRECTION OF THE LEAD EGRESS WITH THE CAPACITOR.

4.4.2 LIFE TEST IS TO BE MADE AT +85°C AND +125°C FOR 2000 HOURS WITH THE APPLICABLE RATED VOLTAGE APPLIED.

4.4.3 SURGE VOLTAGE VOLTAGE IS TO BE RUN AT +85°C ONLY WITH 130% OF RATED VOLTAGE APPLIED IN ACCORDANCE WITH MIL-C-39003.

10.1.6 D001R006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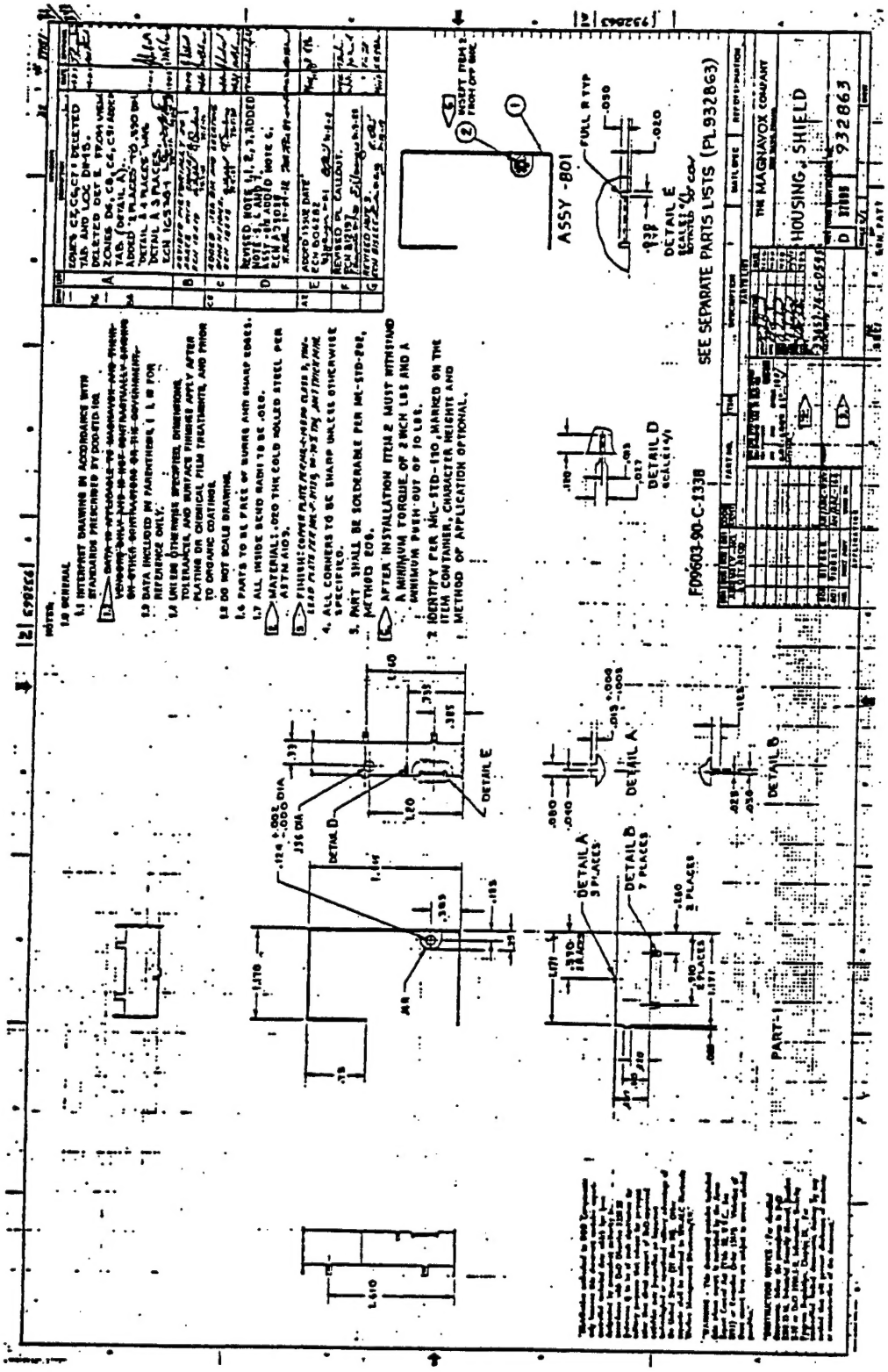
F09603-90-C-1338
CIRCUIT CARD ASSEMBLY
CONTROL BOARD
7225181
ASSEMBLY-001

10.1.7 D001R007


HOUSING, SHIELD
932863
THE MAGNAVOX COMPANY
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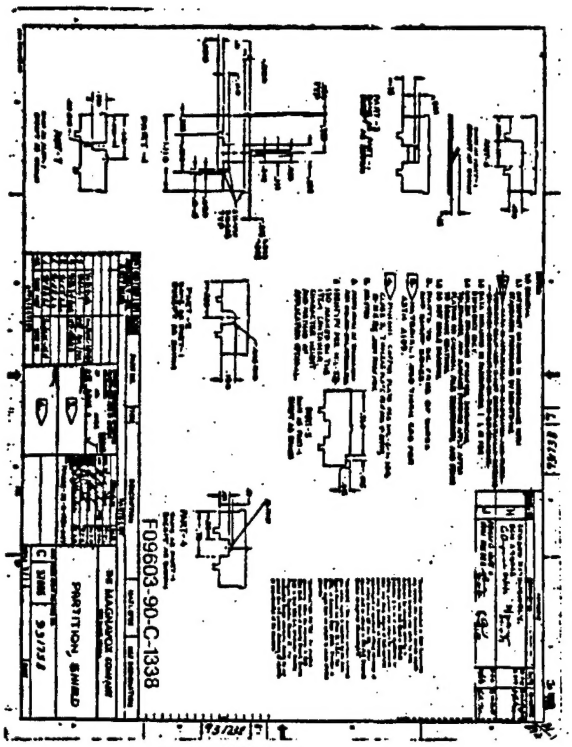
F09603-90-C-1338
ASSY -801
DETAIL A
DETAIL B
DETAIL D
DETAIL E
PART-1

10.2 HiJaak/Ventura

10.2.1 D001R001 - D001R004



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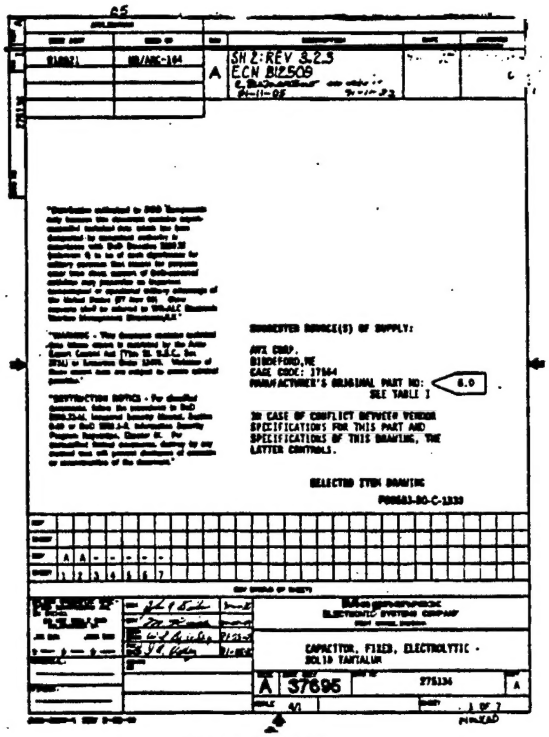

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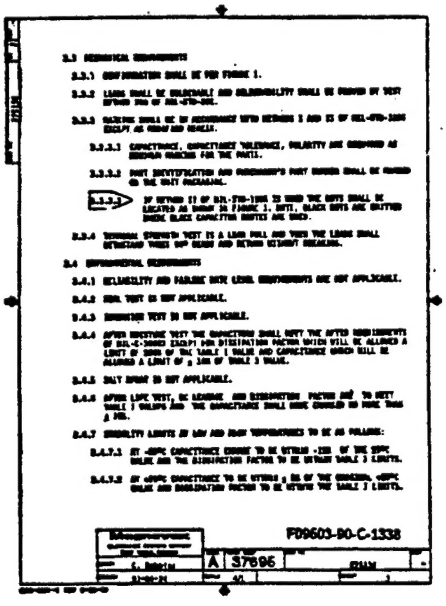

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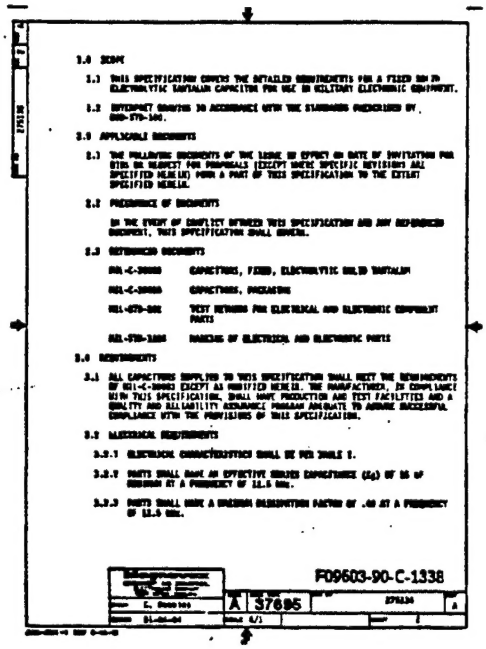

D001R004

10.2.2 D001R005 - D001R007